

REMARKS

The Office Action dated August 3, 2009 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1-7 have been amended to more particularly point out and distinctly claim the subject matter of the present invention. Accordingly, claims 1-8 are currently pending in the application, of which claim 1 is an independent claim.

Applicants respectfully request reconsideration and timely withdrawal of the pending objections and rejections to the claims for the reasons discussed below.

Objection to the Claims

Claims 5-8 were objected to for being in improper form. In particular, claims 5-8 were objected to under 37 C.F.R. § 1.75(c) because a multiple dependent claim cannot depend from another multiple dependent claim. However, Applicants have changed the dependency of claims 3 and 4 from being dependent upon multiple claims to being dependent upon independent claim 1. Accordingly, withdrawal of the objection is respectfully requested.

Rejection under 35 U.S.C. § 112

Claims 1-4 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. In particular, the Office Action alleged that it was not clear as to whether the scope of the claim is “a joint structure of a robot” or a combination of a joint structure of

a robot, an assembly, and a robot link. However, claim 1 has been amended to recite “[a] joint structure to be connected to an assembly and a link of a robot” to address this issue.

The Office Action also alleged that the limitation “the output shaft of the first motor and the output shaft of the second motor are in parallel with each other” of claim 1 is unclear. However, claim 1 has been amended as suggested by the Examiner.

Regarding claim 2, the Office Action alleged that the limitation “for causing the assembly rotary motion” is unclear. However, claim 2 has been amended to recite “a third motor configured to cause a rotary motion of the assembly with respect to the link” to address this issue.

The Office Action also alleged that the recitation “the central axis of the rotary motion” of claim 2 does not have sufficient antecedent support. Claim 2 has been amended to provide antecedent basis support.

Regarding claim 4, the Office Action alleged that the recitation “the first axis of the second rotary unit” does not have sufficient antecedent support. Claim 4 has been amended to provide antecedent basis support.

Rejections under 35 U.S.C. § 103

Claims 1, 2, and 4 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lande, *et al.* (U.S. Patent No. 4,300,362, hereinafter “Lande”) in view of Madhani, *et al.* (U.S. Patent No. 5,797,900, hereinafter “Madhani”). In particular, the Office Action alleged that the combination of Lande and Madhani discloses all of the features

recited in claims 1, 2, and 4. However, this rejection is respectfully traversed as discussed below.

Claim 1, upon which claims 2-8 are dependent, recites a joint structure to be connected to an assembly and a link of a robot. The structure includes a first motor configured to cause the assembly to swing in a longitudinal motion with respect to the link. The structure includes a second motor configured to cause the assembly to swing in a lateral motion with respect to the link. The first motor and the second motor are disposed so that the output shaft of the first motor and the output shaft of the second motor are parallel with each other and are orthogonal to the link.

As will be discussed below, Applicants respectfully submit that the combination of Lande and Madhani fail to disclose all of the features recited in claims 1, 2, and 4.

Lande is related to an articulation for an arm manipulation. In particular, Lande describes an arm 1 made of a metallic tube (*See* Lande at col. 2, lines 7-25). A support 2, which is fixed to a paint spray gun 3, is coupled to the end of the arm 1 by an articulation 4. The articulation 4 includes a first ring 5, at the middle of which is mounted the support 2 of the gun 3, and a second ring 6, which is fixed in the open end of the tubular arm 1. The two rings 5 and 6 of the articulation 4 are interlinked by three connecting rods 9A, 9B, 9C, the ends of which are elbowed and coupled respectively with the rings 5 and 6 by six universal joints (*See* Lande at col. 2, lines 26-36). Fig. 2 of Lande clearly describes that the elbowed ends 9Aa and 9Ab of connecting rod 9A are coupled respectively with the first and second rings 5 and 6 by the first and second Card or universal joints 10Aa

and 10Ab. Lande describes that supports, 11Aa and 11Ba, of two of the three Cardan joints, associated with the ring 5 of the articulation 4, are mounted on the ring 5 so as to be able to pivot about the axis A and B respectively (*See* Lande at col. 2, lines 37-48). In order to control the displacement of the ring 5 relative to the ring 6, two controls rods 12B and 12C of two hydraulic jacks 13B and 13C go through the tubular arm 1 (*See* Lande at col. 2, lines 49-58).

The Office Action asserted that “Lande discloses a joint structure ... the first motor and second motor disposed so that the output shaft of the first motor and output shaft of the second motor are parallel to one another” (*See* Office Action at pages 2 and 3). However, Applicants respectfully submit that the Office Action’s assertion is incorrect because the hydraulic jacks 13B and 13C of Lande cannot be compared to the first and second motors of claim 1. The two hydraulic jacks 13B and 13C of Lande have control rod 12B and 12C for linear motion. The first and second motors of claim 1, however, when interpreted in light of the specification have, for example, rotation shafts. See pages 14, line 4 and page 15, line 8 of the subject application. Applicants note that the scope of the claimed invention must be clearly determined by giving the claims the “broadest reasonable interpretation consistent with the specification (*See* MPEP § 2141(II)(A)). Because the hydraulic jacks 13B and 13C of Lande do not have rotation shafts, Lande fails to disclose a structure of the first motor and second motor that is configured to cause the assembly to swing in longitudinal and lateral motions. See, for example, claim 1, lines 4-7.

Madhani does not cure the above-mentioned deficiencies of Lande. Rather, Madhani describes that the drive motors move/drive cables C1, C2, C3, C4, and C5 in a longitudinal direction only. Therefore, irrespective of whether the drive motors in Madhani are orthogonal or not, the combination of the drive motors in Madhani and Lande cannot disclose the structure of the first and second motors causing the assembly to swing in longitudinal and lateral motions (claim 1, lines 4-7).

Accordingly, Applicant respectfully submits that claim 1 patentably distinguishes over the combination of Lande and Madhani.

Because claim 2 and 4 depend upon claim 1, Applicants respectfully submit that claims 2 and 4 include the patentable features of base claim 1. Therefore, Applicants respectfully submit that these claims patentably distinguish over the combination of Lande and Madhani for at least the same reasons as base claim 1.

Claim 3 was rejected under 35 U.S.C. §103(a) as being unpatentable over Lande in view of Madhani, and further in view of Iriyama (U.S. Patent No. 5,732,599). The Office Action alleged that Lande discloses all of the elements of claim 3, except for the feature of “an elastic member generating a force between the movable cover and at least one of the assembly and the robot link, and placing the movable cover at a predetermined position”. In an effort to cure this deficiency, the Office Action relied upon Iriyama to disclose the above-quoted feature. However, this rejection is traversed as discussed below.

Lande and Madhani are discussed above. Iriyama is related to an industrial robot. In particular, Iriyama describes an articulating elbow joint of an industrial robot device to prevent adhesion of dust and vapor materials from paints and solvents on the cables and wires exposed to the vapor atmosphere (*See* Iriyama at col. 1, lines 55-58).

However, Iriyama fails to cure the above-mentioned deficiencies of Lande and Madhani with respect to claim 1. For example, Iriyama does not disclose the structure of the first and second motors causing the assembly to swing in longitudinal and lateral motions (claim 1, lines 4-7). Because claim 3 depends upon claim 1, Applicants respectfully submit that claim 3 includes the patentable features of base claim 1. For this reason, Applicants respectfully submit that claim 3 patentably distinguishes over the combination of Lande, Madhani, and Iriyama.

Conclusion

In view of the claim amendments and arguments submitted above, Applicants respectfully submit that the objections and the non-prior art rejections are overcome. In addition, Applicants respectfully submit that the arguments discussed above overcome the prior art rejections. Therefore, Applicants respectfully request that the subject application pass to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, Applicants' undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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